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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,291	06/18/2001	Grzegorz J. Czajkowski	SUN-P6118-RSH	3914

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EXAMINER

ALI, SYED J

ART UNIT	PAPER NUMBER
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2127

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/884,291

Applicant(s)

CZAJKOWSKI ET AL.

Examiner

Syed J Ali

Art Unit

2127

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the amendment filed November 22, 2004. Claims 1-21 are presented for examination.
2. The text of those sections of Title 35, U.S. code not included in this office action can be found in a prior office action.

Claim Rejections - 35 USC § 101

3. **Claims 15-21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.**
4. As per claim 15, the apparatus is at best a software system, per se, failing to be tangibly embodied or including any recited hardware as part of the system. Claims 16-21 are non-statutory for at least the same reasons as discussed for their parent claim, as they fail to present any limitations that resolve the deficiencies of their parent claim.

Claim Rejections - 35 USC § 103

5. **Claims 1-3, 8-10, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haggar et al. (US 2002/0091904) (hereinafter Haggar) in view of Shaylor (US 2002/0108025).**

Art Unit: 2127

6. As per claim 1, Haggar teaches the invention as claimed, including a method for managing surplus memory in a multitasking system, comprising:

reserving a guaranteed amount of memory for a task from a heap in the multitasking system (paragraph 0006);

receiving a request from the task to allocate memory for a new object (paragraphs 0006-0009, 0023, 0033); and

if memory is available in the guaranteed amount of memory for the task, allocating memory for the new object from the guaranteed amount of memory (paragraph 0007, 0033);

otherwise, if surplus memory is available in the heap in addition to memory allocated to tasks, reserving an additional amount of memory to the task from the heap (paragraph 0007, 0034-0035), and

allocating memory for the new object from the additional amount of memory, whereby allocating memory for the new object from the additional amount of memory delays garbage collection (paragraphs 0007, 0034-0035).

7. Shaylor teaches the invention as claimed, wherein the memory reserved for a task is separate from memory reserved for all other tasks in the heap of a multitasking system (paragraphs 0035-0036).

8. It would have been obvious to one of ordinary skill in the art to combine Haggard and Shaylor since they are directed to essentially the same concept of dynamic memory allocation to accommodate memory requests at runtime. Haggard discusses dynamically increasing the size of a memory heap in response to a request from a program that exceeds the available memory. This provides benefits in terms of delaying garbage collection and increasing the processing

Art Unit: 2127

efficiency of the computer. Shaylor provides an improvement upon this memory allocation scheme by allocating a separate portion of physical memory for each task (paragraphs 0035-0036) and dynamically increasing the size of the allocated memory while a task is executing (paragraph 0038). Haggar and Shaylor both address the deficiencies of known memory allocation methods. Both seek to provide a way of allocating memory to virtual machines in particular, where virtual machine tasks tend to have changing memory requirements over the course of execution.

9. As per claim 2, Haggar teaches the invention as claimed, including the method of claim 1, wherein if surplus memory is not available in the heap in addition to memory allocated to tasks, the method further comprises:

performing garbage collection on memory to reclaim unused reserved memory (paragraph 0024, 0039), and

allocating memory for the new object from reclaimed surplus memory (paragraph 0024, 0039).

10. As per claim 3, Haggar teaches the invention as claimed, including the method of claim 1, wherein reserving the guaranteed amount of memory from the heap includes:

determining if there is sufficient memory available in the heap (paragraphs 0033, 0039);
and

if not, performing garbage collection to reclaim allocated surplus memory (paragraph 0024, 0039), and

reserving memory for the task from reclaimed memory (paragraph 0024, 0039).

11. As per claims 8-10, Haggar teaches the invention as claimed, including a computer-readable storage medium storing instructions that when executed by a computer causes the computer to perform the method of claims 1-3, respectively (Fig. 2).

12. As per claims 15-17, Haggar teaches the invention as claimed, including an apparatus that facilitates managing surplus computer memory in a multitasking system comprising the method of claims 1-3, respectively (Fig. 2).

13. **Claims 4-7, 11-14, and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haggar in view of Shaylor in view of Otis (US 2002/0099765).**

14. As per claim 4, Otis teaches the invention as claimed, including the method of claim 1, wherein memory in the heap is managed using a generational garbage collector (paragraph 0048).

Art Unit: 2127

15. It would have been obvious to one of ordinary skill in the art to combine Haggard, Shaylor, and Otis since a generational memory organization and garbage collector allows objects that are commonly referenced to have a more permanent position in the memory. Those objects that are not referenced often are the first to be reclaimed, thereby decreasing the overall computation cost associated with garbage collection (Otis, paragraph 0008). Additionally, Haggard indicates that any garbage collection technique may be used to manage the memory or detect unused heap memory (Haggard, paragraph 0040).

16. As per claim 5, Otis teaches the invention as claimed, including the method of claim 4, wherein a plurality of tasks share an old generation of the generational garbage collector (paragraphs 0049, 0052).

17. As per claim 6, Otis teaches the invention as claimed, including the method of claim 5, wherein each task of the plurality of tasks has a new generation of the generational garbage collector belonging to the task (paragraphs 0052-0053).

18. As per claim 7, Otis teaches the invention as claimed, including the method of claim 4, wherein the generational garbage collector is a copying garbage collector (paragraphs 0055, 0060).

Art Unit: 2127

19. As per claims 11-14, Haggar teaches the invention as claimed, including a computer-readable storage medium storing instructions that when executed by a computer causes the computer to perform the method of claims 4-7, respectively (Fig. 2).

20. As per claims 18-21, Haggar teaches the invention as claimed, including an apparatus that facilitates managing surplus computer memory in a multitasking system comprising the method of claims 4-7, respectively (Fig. 2).

Response to Arguments

21. **Applicant's arguments with respect to the rejections under 35 U.S.C. §101 filed November 22, 2004 have been fully considered but they are not persuasive.**

22. Applicant has amended claim 15 in an effort to overcome the rejections under 35 U.S.C. §101. Although the claims now identify the memory as “computer memory” and the reserving mechanism guaranteeing an amount of “physical memory”, these limitations are directed to the intent of the execution of the apparatus and not the apparatus itself. The claimed apparatus still fails to recite any hardware as part of the system; the apparatus is not tangibly embodied in a manner so as to be executable as the only hardware is in an intended use statement.

23. **Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new grounds of rejection.**

Conclusion

24. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (571) 272-3769. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2127

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Syed Ali
February 22, 2005



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